

Thermo Recorder



TR-71U / TR-72U

2 Ch. Data Logger with USB Connection

For Measuring and Recording Temperature and Humidity

Our compact lightweight TR-71U / 72U units allow you to effortlessly measure and record temperature in a range of -60 to 155 C and humidity from 10 to 95%. That data can then be transferred via high speed USB cable to your computer whereby our exclusive software empowers you to create colorful graphs and tables for saving or printing.

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**Easy to Use Software makes
Graph and Table Creation a Snap.**

T&D Corporation

Thermo Recorder

2Ch. Data Logger USB Connection
TR-71U / 72U

Easy USB Connection (Multiple Units OK) / Real-time Monitoring and Graph Display
Adjustment Function Enabled Software / 1 Year Operation with only 1 AA Battery



TR-71U

TR-72U

Measure / Record



Connect



Download and Analyze

2 Measurement and Recording Channels in Each Unit

TR-71U/TR-72U Thermo Recorders are data loggers capable of measuring, displaying and recording temperature and humidity data. TR-71U has two temperature channels and TR-72U has one temperature and one humidity channel. The data recorded into the TR-71U/TR-72U units can then be downloaded quickly via USB cable to your computer whereby with our exclusive software you can easily process the data into graphs, tables, save to files and/or print it out. Moreover, it is possible to connect more than one unit at the same time.

Wide Temperature Measuring Range -60°C to 155°C

The external sensor that comes with the TR-71U can measure and record from -40°C to 110°C, while optional sensors can give you a range of -60°C to 155°C. There is an array of optional external sensors to meet your every need.

Humidity Measurement Range 10% to 95%RH

The two channel external sensor that comes with the TR-72U can measure and record temperature from 0 to 50°C and humidity from 10 to 95% RH.

Large Data Capacity: 8,000 Readings X 2 Channels

Each channel can record up to 8,000 readings; giving you about one year of continuous recording at a recording interval of 60 minutes.

15 Recording Intervals 2 Recording Methods

You can select from 15 recording intervals from one second to one hour. There are also two methods of recording to chose from.

One Time Method: Recording stops when 8,000 readings have been recorded.

Endless Loop Method: When 8,000 readings have been recorded the oldest data is overwritten and recording continues.

Accurate, Compact, Lightweight and Affordable

Our exclusive design and technology has allowed us to create a highly accurate yet compact and lightweight unit (55×78×18mm 62g) that is unbelievably affordable.

Ready to Use - All in One Package

Everything you need to get started (main unit, sensor, battery, software, communication cable and user's manual) is included in this All in One Package. All you need to do is supply the computer.

Reliable Backup Function

We have eliminated the worry of losing data due to power loss or the switch being accidentally turned off.

When Battery Power becomes Low

When battery power becomes low a battery life warning will appear on the unit's display indicating that the battery should be changed. If within a short time the battery is changed, measurement and recording will not be interrupted and there will be no data loss. If the battery is not changed the unit will automatically go into SLEEP mode whereby measurement and recording will stop but, due to our BACK UP FUNCTION, data will not be lost and will remain saved for up to one year.



Battery Life
Warning Indicator



Sleep Mode
Indicator

When the Switch is turned OFF

If while recording the power switch is accidentally turned OFF, data will not be lost but will be saved for up to one year from the time it was switched OFF.

Note: Even if the unit is in sleep mode it needs battery power. Hence, a total loss of battery power or removal of the battery will result in the loss of data.

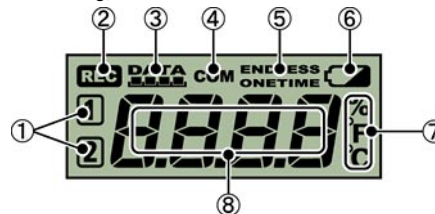
One Year Continual Use on One Battery

Using our specially designed low energy consumption circuit this unit can run on one AA Alkaline battery for up to one year of continued use. No need to worry about where you place it as the battery will allow you to measure and record over long periods of time no matter if the unit is in transit or in a distant place.

Note: Battery life will depend on the recording environment, recording interval, communication frequency, and ambient temperature. The above battery life test was carried out using a brand new battery and in no way do we guarantee a battery's life.

Easy to Read Multi-Functional Display

The easy to read LCD displays present temperature, recording condition, battery life warning, and unit of measurement.



- 1) The channel number of the measurement being displayed will appear.
- 2) The recording condition will appear:
ON: Recording in progress. BLINKING: Waiting for programmed start.
- 3) After every 2000 readings the scale will be marked from left to right.
- 4) This will appear when data is being sent or received.
- 5) ONETIME: When the number of recorded readings reaches 8000, "FULL" will appear in the unit's LCD display and recording will automatically stop.
ENDLESS: When the number of recorded readings reaches 8000, the oldest data reading will be overwritten and recording will continue.
- 6) When the battery power becomes low, this will appear in the LCD display. If the battery power becomes even lower, SLP will appear and normal operations will stop. If the signal appears, please change the battery as soon as possible.
- 7) The unit of measurement (°C, °F, %) for the display will appear.
- 8) Current measurements or operational messages such as FULL or SLP will appear.

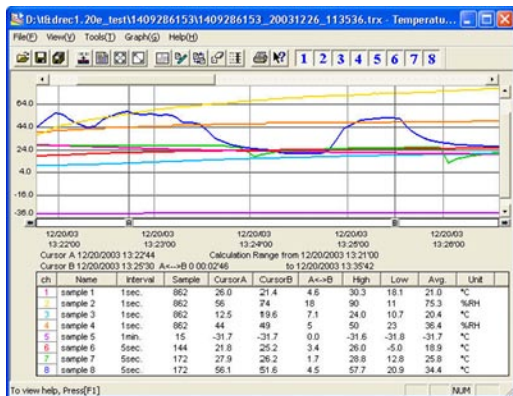
Standard Software

Easy to use Windows compatible software allows you to control all aspects of set up for any TR-71U/TR-72U unit, as well as to print, and to create text files, tables, and colorful graphs from the recorded data.

Up to 8 Channels of Data can be Processed at One Time

post-adjusted value.

By simply downloading the data from the main unit a colorful graph representing that data will be automatically created. Up to 8 channels (4 units) of data can be represented in one graph.



T&D Recorder for Windows

Adjustment Function

By setting adjustment values beforehand, you can record and display the post-adjusted measurement values. You can choose from two adjustment methods:

1-point and 2-point. Adjustment will be carried out using an adjustment equation of $Y=aX+b$: where X is the pre-adjusted measurement value and Y is the

Current Readings Monitoring Display

With our exclusive software, you cannot only monitor the current measurements at a set interval, but can view those measurements in a continually changing graph. You can simultaneously display the current measurements and corresponding graphs for the number of units you have connected.

Graph / Table Printing Function

You can print out in color or monochrome the graphs just as they appear on your screen. You can also print out in table form all of the data in order of date and time.

Creating Text Files

You can create Text Files (CSV format, etc...) to allow you the option of processing and managing your data using Excel, Lotus or any other popular spreadsheet software.

Optional Sensors

TR-1106

Teflon-Shielded Sensor

Cable Length: 0.6m

Thermal-Constant Time:

In the Air: Approx. 15 Sec.

In agitated water: Approx. 2 Sec.

TR-1220

Stainless Protection Sensor

Cable Length: 2m

Thermal-Constant Time:

In the Air: Approx. 36 Sec

In agitated water: Approx. 7 Sec.

TR-1320

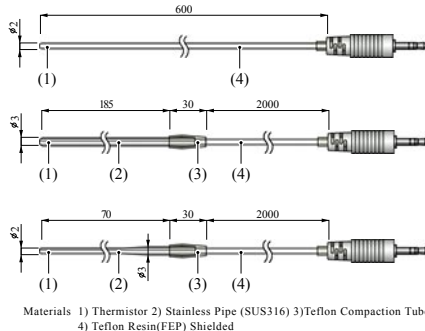
Stainless Protection Sensor

Cable Length: 2m

Thermal-Constant Time:

In the Air: Approx. 12 Sec

In agitated water: Approx. 2 Sec.



Materials 1) Thermistor 2) Stainless Pipe (SUS316) 3) Teflon Compaction Tube 4) Teflon Resin(FEP) Shielded

Possible Measurement Range: -60 to 155°C Sensor Temperature Durability: -70 to 180°C Water Resistant Ability: Splash Resistant Measurement accuracy: Average $\pm 0.5^{\circ}\text{C}$ (-40 to 80°C) Average $\pm 1.0^{\circ}\text{C}$ (-60 to -40/80 to 100°C) Average $\pm 2.0^{\circ}\text{C}$ (100 to 155°C)

TR-0106

TPE resin-shielded sensor

Cable Length: 0.6m

Thermal-Constant Time:

In the Air: Approx. 75 Sec.

TR-0206

Stainless Protection Sensor

Cable Length: 0.6m

Thermal-Constant Time:

In the Air: Approx. 75 Sec

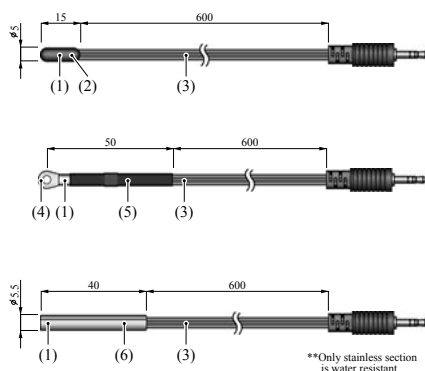
TR-0306

Stainless Protection Sensor

Cable Length: 0.6m

Thermal-Constant Time:

In agitated water: Approx. 18 Sec.



**Only stainless section is water resistant.

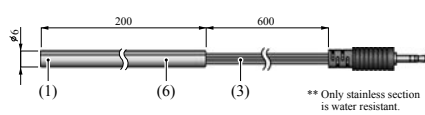
TR-0406

Stainless Protection Sensor

Cable Length: 0.6m

Thermal-Constant Time:

In agitated water: Approx. 20 Sec.



** Only stainless section is water resistant.

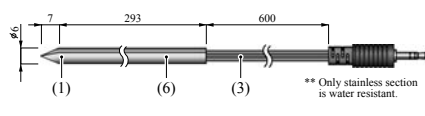
TR-0506

Stainless Protection Sensor

Cable Length: 0.6m

Thermal-Constant Time:

In agitated water: Approx. 20 Sec.



** Only stainless section is water resistant.

Possible Measurement Range: -40 to 110°C Sensor Temperature Durability: -50 to 115°C Measurement Accuracy: Average $\pm 0.3^{\circ}\text{C}$ (-20 to 80°C) Average $\pm 0.5^{\circ}\text{C}$ (-40 to -20 / 80 to 110°C)

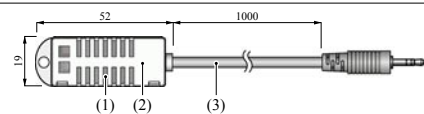
TR-71U

TR-72U

TR-3110

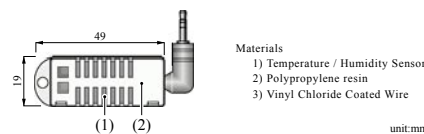
Humidity and Temperature Sensor

Cable Length: 1m



TR-3100

Humidity and Temperature Sensor



Materials
1) Temperature / Humidity Sensor
2) Polypropylene resin
3) Vinyl Chloride Coated Wire

unit:mm

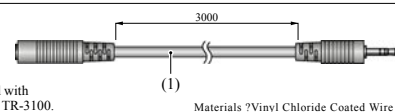
Humidity Measurement Range: 10 to 95%RH Temperature Measurement Range: 0 to 50°C Sensor Durability Range: -10 to 55°C Humidity Measurement Accuracy: $\pm 5\%$ RH (at 25°C and 50%RH) Service Life: 1 year under normal conditions Operational Conditions: No Dew Condensation or Water Leakage / No contact with organic solvents, solutions or gases emitted from spoiled foods.

TR-1C30

Sensor Extension Cable

Cable Length: 3m

Note: Only one cable per sensor. Can not be used with Temperature / Humidity sensor TR-3110 or TR-3100.



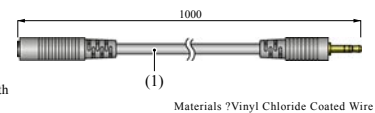
Materials ?Vinyl Chloride Coated Wire

TR-5C10

Sensor Extension Cable

Cable Length: 1m

Note: Only one cable per sensor. Can not be used with Temperature / Humidity sensor TR-3110.



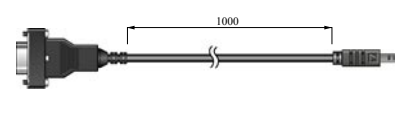
Materials ?Vinyl Chloride Coated Wire

TR-07C

Serial Communication Cable

Cable Length: 1m

Note: For communication with computer.

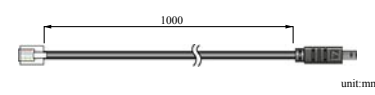


TR-4C10

Serial Communication Cable

Cable Length: 1m

Note: For communication with RTR-57C



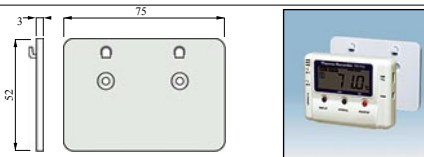
unit:mm

TR-07K2

Wall Attachment

Included:
Wall Mount Screws $\times 2$
Double-Sided Adhesive Tape $\times 1$

Material: ABS Resin



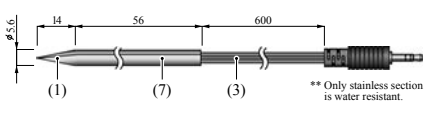
TR-0706

Stainless Protection Sensor

Cable Length: 0.6m

Thermal-Constant Time:

In agitated water: Approx. 18 Sec.



** Only stainless section is water resistant.

Materials 1) Thermistor 2) TPE resin-shielded sensor 3) TPE resin-shielded wire 4) M3Screw Hole 5) Compaction Tube 6) Stainless Pipe(SUS304) 7) Stainless Pipe(SUS316)

unit:mm

Product Specifications

Unit	TR-71U	TR-72U
Measurement Channel	2 Channels (Select from Ch1. internal / Ch.2 external)	2 Channels (Temperature and Humidity)
Measurement Item	Temperature	Temperature Humidity
Internal Sensor	-10 to 60°C	-10 to 60°C -
External Sensor	-40 to 110°C	0 to 50°C 10 to 95%RH
Optional Sensor	-60 to 155°C *1	-40 to 110°C -
Measurement Accuracy (Standard Sensor)	Average $\pm 0.3^{\circ}\text{C}$ (-20 to 80°C) Average $\pm 0.5^{\circ}\text{C}$ -40 to -20/80 to 110°C	$\pm 5\% \text{RH}$ (At 25°C 50%RH)
Measurement Resolution	0.1°C	1%RH
Sensor Materials	Thermistor	Macromolecular Humidity Sensor
Recording Interval	1-2-5-10-15-20-30 Seconds / 1-2-5-10-15-20-30-60 Minutes	Total of 15 choices
Recording Capacity	8,000 Readings $\times$ 2 Channels	
Recording Method	Endless Loop Method (Overwrite from the oldest data when recording capacity is full) One Time Method (Stop recording when recording capacity is full)	
LCD Display	(Ch1 only, Ch2 only, alternating display) Measurements, Recording Status, Battery Life Warning, Amount of Recorded Data, Unit of Measurement	
Power	AA alkaline battery (LR6)	
Battery Life	About 1 year *2	
Data Back-up	Activated when battery power is low or when switch is off (About 1 year)	
Interface	USB Communication Cable (option: RS-232C)	
USB Communication Time	When downloading (1 unit of full data - about 8 seconds)	
Dimensions	H55mm $\times$ W78mm $\times$ D18mm	
Weight	About 62g (Including one AA battery)	
Attached Sensors	TR-0106 $\times$ 2 (TEP Resin-coated sensors)	TR-3100 $\times$ 1 (Temp. Humidity Sensor)
Accessories included in package	AA alkaline Battery (LR6) $\times$ 1 / User's Manual (Warranty) $\times$ 1 USB Cable $\times$ 1 (US-15C; length 1.5m) Software Set $\times$ 1 / User's Manual (Warranty) $\times$ 1	

*1: There are two types of temperature sensor for TR-71U depending on measurement range.

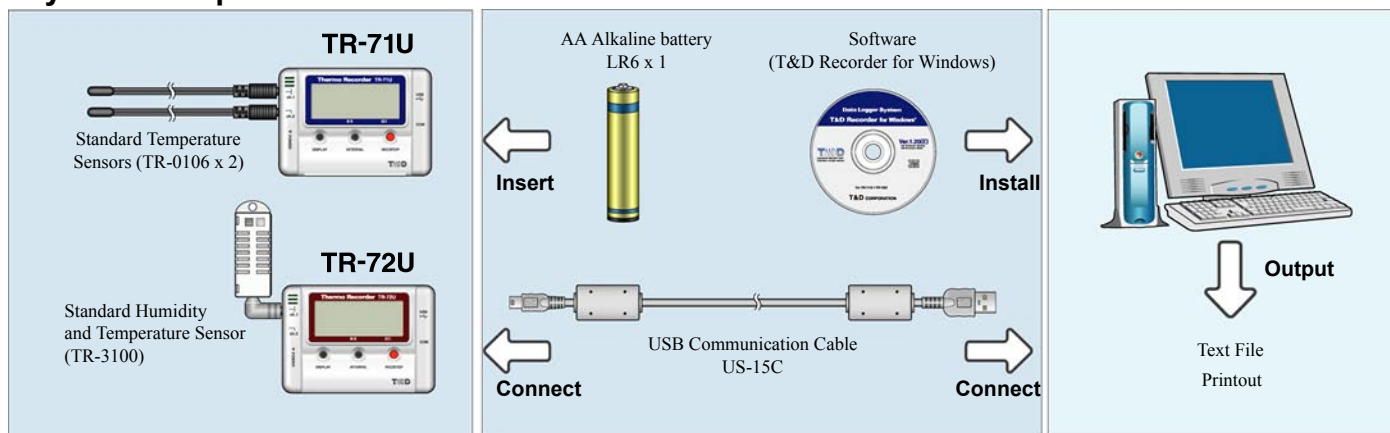
*2: Battery life depends upon the measuring environment, recording interval, and quality of the battery being used.

Software Specifications

Software	T&D Recorder for Windows
Compatible Devices	TR-71U - TR-72U
Communication Functions	Recording Start (Programmed Start / Immediate Start) - Recording Stop Main Unit Settings (Recording Interval - Recording Method - Upper and Lower Limits) Downloading of Recorded Data
Temp/Humidity Graph Graph Display	Temperature and Humidity Graphs for each Channel Zoom in, out and scroll with mouse or keyboard Change Channel Colors - Turn ON and OFF Channel Display
Data Display	Channel Name - Recording Interval - Number of Readings Highest, Lowest and Average Readings - Unit of Measurement. AB Cursor Dates, Times and Data Readings Calculated Difference between Cursor A and B
Number of Channels	8 Channel Simultaneous Display and Processing Possible to process mixed data from TR-71U and TR-72U units. (up to 4units.)
Others	Data List Display - Calculation Range Settings - Data Maintenance Edit Recording Conditions - Delete Data by Channel Re-order Data by Channel
Other	Serial Port Auto Find Function
File Output	T&D Common Data File - Text File (CSV, etc) (Selected Range or File for Entire Period)
Printing	Graphs / Tables
Compatible OS	Microsoft Windows 2000 / XP English Microsoft Windows 98 / Me English Microsoft WindowsNT 4.0 English *1
PC/CPU	IBM Compatible with higher than Pentium 90MHz USB Port (1.0 / 1.1)
Memory	More than 16MB
Hard Disk	More than 4 MB of free space (Data will need more space)
Monitor	VGA (640 $\times$ 480) more than 256 colors

*1: USB communication with TR-71U / 72U data loggers cannot be carried out using WindowsNT4.0.

System Setup



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